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BUREAU OF PLANT INDUSTRY,  
Plant Life History Investigations,  
WASHINGTON, D. C.

THE MORTON CITRANGE.<sup>1</sup>

NAME AND ORIGIN.—In the last Yearbook of the Department an outline was given of the work which had been conducted up to that time in the production of hardy types of citrus fruits, and two new hardy



FIG. 1.—The Morton citrange. (Natural size.)

sorts, the Rusk and Willits citranges, were described.<sup>2</sup> Since that time further hybrids have fruited, and one apparently very excellent sort has been secured. This new citrange has, with the consent of the Secretary, been named the *Morton*, in recognition of the valuable services to agriculture of the late Hon. J. Sterling Morton.

Figure 1 shows a fruit of the Morton citrange, while figure 2 illustrates a cross section of this variety.

<sup>1</sup> Reprinted, with slight changes, from "New Fruit Productions of the Department of Agriculture," by Herbert J. Webber, Yearbook, 1905, pp. 276-278, where a colored plate is also given.

<sup>2</sup> "New Citrus Creations of the Department of Agriculture," by Herbert J. Webber and Walter T. Swingle, Yearbook, 1904, pp. 221-240, pls. x-xxii.



This very remarkable hybrid (No. 771), which in fruit characters closely resembles an ordinary orange, is nearly related to the Willits citrange (hybrid No. 777), having developed from another seed of the same hybrid fruit. The original fruit from which this hybrid developed was a cross of the Trifoliate orange with pollen of the sweet orange, the pollination being made by Mr. Walter T. Swingle in the grove of Col. G. H. Norton, at Eustis, Fla. This crossed fruit gave 40 seedlings, of which 11 exhibited clearly intermediate characters of foliage, showing that they were true hybrids, while the other 29 showed no indications of hybridization.

DESCRIPTION OF FRUIT AND TREE.—Fruit slightly compressed, spherical or nearly so; large, from 3 to  $3\frac{1}{2}$  inches in diameter and from  $2\frac{1}{2}$  to  $3\frac{1}{4}$  inches in height; color rather light orange yellow, similar to the Willits citrange; surface



FIG. 2.—Cross section of the Morton citrange. (Natural size.)

smooth or slightly roughened by small depressions over some of the large oil glands, this roughening being most pronounced at the base of the fruit, and with a few slight furrows running from base to apex, giving the fruit a slightly lobed appearance; weight medium, from 9 to 11 ounces, somewhat lighter than water; calyx persistent but inconspicuous, as in the case of the ordinary orange; rind medium thin, one-eighth to three-sixteenths inch in thickness, tender, not adhering so close to fruit as in the Rusk citrange, with some flavor of orange and some of Trifoliate, no more disagreeable to taste than skin of ordinary orange; oil glands similar in size to those of ordinary orange, mainly round (fig. 3, *a*); pulp translucent, light orange yellow; pulp vesicles longer and smaller in diameter than in ordinary orange (fig. 3, *b* and *c*); tender; segments 9 to 10, separating membranes rather thicker and firmer than in ordinary orange, with very slight suggestion of the Trifoliate orange bitterness; texture of fruit tender;



axis small, one-fourth to five-sixteenths inch in diameter; flavor sprightly acid, with a peculiar but pleasant taste, sweeter than either the Rusk or Willits citrange and less bitter; seedless, or nearly so; aroma pleasant, but very light, suggesting both the common and Trifoliate orange. Trees similar to Trifoliate orange, vigorous and hardy, evergreen or semi-evergreen, medium height, shapely; leaves trifoliate, but larger than those of ordinary Trifoliate orange. Season of maturity medium early—from first of October to last of November.

The tree of the Morton citrange is a vigorous grower, of attractive appearance. The leaves are nearly twice as large as those of the Trifoliate orange. The seedling No. 783 (Rustic) is another true hybrid similar to the Morton citrange. While No. 783 is almost exactly the same in all foliage and tree characters as No. 771 (the Morton), it produces an entirely different fruit, which, while differing greatly from the Trifoliate orange fruit, is nevertheless small and of rather inferior quality in comparison with the Morton citrange.

While most of the fruits of the Morton citrange that have been produced up to the present time have been entirely seedless, a few seeds and rudiments occur in some fruits. It is probable that the variety, when extensively grown, will produce few seeds.

**RESISTANCE TO COLD.**—The hardiness or cold-resistant quality of the Morton citrange has not been thoroughly tested, but it is apparently about the same in this respect as the Rusk and Willits citranges. It has

endured all of the winters at Glen St. Mary, Fla., since the spring of 1899 without losing its leaves. During this period severe freezes have occurred, which were very disastrous to the orange industry even much farther south. In January of 1900, when the buds were about eight months old, thus being young and tender, they endured a temperature between  $15^{\circ}$  and  $18^{\circ}$  F. without noticeable effect. Since this time these trees and others under test at the experiment station at Lake City, Fla., have frequently withstood temperatures which would have seriously injured the ordinary orange.

At the Georgia Experiment Station, located at Experiment, Ga., a set of the Department's hardy orange hybrids has been tested under the direction of Director R. J. Redding and Prof. H. N. Starnes. Here the Morton citrange (No. 771) has withstood the winters, although the temperature fell in February, 1901, to  $17^{\circ}$  F. and in December, 1901, to  $8^{\circ}$  F. At the Alabama Experiment Station, where trees of this hybrid were also sent for testing, a temperature of about  $9^{\circ}$  F. was experienced in December, 1901. The trees of the Morton citrange at this station are reported dead, but it is not clear whether their death is to be attributed directly to the cold. At this station other intermediate

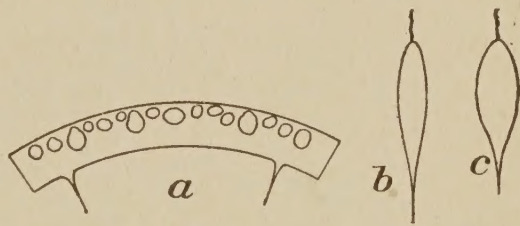


FIG. 3.—*a*, Section of the skin of Morton citrange, showing oil glands; *b*, pulp vesicles of Morton citrange; *c*, pulp vesicles of ordinary orange. (Natural size.)



hybrids of apparently similar hardiness have withstood all winters and are still alive. It is believed from the evidence accumulated that the Morton citrange can be grown safely without protection throughout the greater parts of Georgia, Alabama, Mississippi, Louisiana, Florida, California, and eastern and southern Texas. With some protection during severe cold spells, while the trees are small, it can probably be grown in South Carolina and in southern Tennessee and Arkansas. It can probably also be grown in regions of low altitude in Arizona and New Mexico and near the coast in Oregon and Washington. In any region which is only slightly too cold for the ordinary orange the Morton citrange can be expected to grow without danger of freezing.

USES.—The fruit of the Morton citrange is so similar to an ordinary orange that the two would not be distinguished by an ordinary observer. The former differs from the latter only in being slightly lighter in color and having a slight indication of lobing. This does not detract from its appearance, which is equal to that of a good ordinary orange. The fruit has been tested by several different persons familiar with oranges and the orange industry, and all, without exception, considering its hardiness, pronounce it a very valuable and desirable fruit. It is more sour than the ordinary sweet orange, but some so-called sweet oranges are sold in the market which are as sour as the Morton citrange. It has a pleasant characteristic flavor with very slight bitter taste, and served with sugar it will be found to be a good breakfast fruit. The rather firm membranes separating the segments allow the pulp to be easily extracted with a spoon. It makes an attractive citrangeade, similar to lemonade or limeade, but is probably no better for this purpose than the Rusk or Willits citranges.

It is believed that this fruit will prove of great value for cultivation in the sections previously mentioned and that it will find a permanent place in the local southern markets and possibly also in northern markets. For eating purposes and as a dessert fruit it is much superior to the Rusk or the Willits citrange.

Approved:

B. T. GALLOWAY,  
*Chief of Bureau.*

DECEMBER 9, 1907.